

Whither Global Production Networks in Economic Geography?

Past, Present and Future

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1. How did it all begin? Genesis of the global production networks framework in economic geography

Over the last five years, considerable progress has been achieved in economic geography in developing a sophisticated theoretical framework for analyzing territorial formation and economic development in the global economy. This genre of theoretical development has shown the continuing unevenness of the spatiality of production and consumption, the differentiating role of structural and institutional conditions at various scales, and the responses and strategies of firms, non-firm organisations and government bodies shaping the global economy across space and time. In this introductory paper, we use the “global production networks” (GPN) framework to describe this increasingly important body of literature in economic geography and its cognate disciplines in development studies and economic sociology. We trace the historical antecedents of the GPN framework in economic geography, assess the state-of-the-art of this GPN-inspired literature (next section), and discuss the future prospects for a common research agenda (final section). In doing so, we will contextualize and introduce the five subsequent papers in this special issue.

There is no doubt that the GPN framework in economic geography has a diverse set of historical precursors – mostly from outside the discipline. Broadly, we can identify four highly influential intellectual antecedents in relation to their historical contexts: (1) the value chain framework in strategic management since the early 1980s; (2) the networks and embeddedness perspectives in economic and organizational sociology since the mid 1980s; (3) the actor-network analysis in science studies since the mid 1980s; and (4) the global commodity/value chain analysis in economic sociology and development studies since the mid 1990s. We will discuss below each of these four strands of intellectual antecedents and link them to the contested evolution of key research paradigms in economic geography.

In Table 1, we provide a summary of these four strands of literature that predates the GPN framework in economic geography. With hindsight, it is fair to note that as the concept of “value chain” was gaining prominence in different research and policy circles through the pioneering work of Michael Porter (1980; 1985) during the early 1980s, explaining the spatial uneven development of capitalist economies was the “big issue” confronting radical economic geographers (e.g. Harvey, 1982; Massey, 1984; Smith, 1984). Interestingly, while both strands of literature took the concept of “value” seriously, there was little cross-fertilization at the conceptual level. At around the same time, the geography of enterprises seemed to preoccupy the research attention of many industrial geographers who were concerned primarily with territorial systems of business enterprises and their industrial linkages (e.g. Hamilton and Linge, 1979; 1981; 1983). The value chain framework eventually found its way into economic geography through the work of Peter Dicken (1986) and subsequently a large body of literature on transnational corporations and regional development.

Table 1 here

In retrospect, the value chain framework associated with Porter’s work has provided a crucial but contested analytical concept for the GPN framework – especially in relation to *value* and its contestation over space. This explicit concern with how value is created, enhanced, and captured in different spatial configurations fundamentally underpins the theoretical

framework developed by researchers associated with what Bathelt (2006) calls the “Manchester School” of global production networks (e.g. Henderson et al., 2002; Coe et al., 2004). Here, value is defined in both Marxian notions of surplus value and more conventional understandings in terms of economic rent. The GPN framework thus brings together the different strands of the analysis of value in an integrated form. Another important contribution of the value chain framework to the development of GPN work is that it recognizes the conceptual inseparability between manufacturing and service activities in constituting economic production. In the original version of Porter’s value chain, both kinds of economic activities are central to value chain processes. While some economic geographers have long argued for this integral understanding of production in relation to social divisions of labour (see Sayer and Walker, 1992), its theoretical significance has become much more magnified through the GPN framework because we simply cannot understand manufacturing activities without a concomitant analysis of how these value activities are organized through a wide range of service imperatives (e.g. finance, logistics and retail). What is more, considering the importance of services in the modern world economy makes research on service-sector GPNs an important task in its own right.

This deep concern with the *organization* of GPN activities – manufacturing or service-related – brings us to the second historical antecedent of the GPN framework. Since the mid 1980s, networks and embeddedness have come to dominate the lexicon in economic sociology, organization studies, and strategic management (see Guillén et al., 2003; Smelser and Swedberg, 2005). Sociologists have been interested in social network analysis since the 1920s and the 1930s (Kilduff and Tsai, 2003). This genre of work focuses on social interaction as the micro-foundation of society. It was not until the mid 1980s that the idea that economic action being embedded in networks of ongoing social relations was resurrected by the work of Mark Granovetter (1984). Following Karl Polanyi’s work, Granovetter argued against the atomistic reading of economic relations in transaction cost economics associated with Oliver Williamson (1975; 1985). Since then, this idea of embeddedness and networks has strongly reverberated in management and organization studies. An enormous range of theoretical and empirical studies has focused on how network embeddedness can enhance business formation and firm performance (Dacin et al., 1999).

While this theoretical development in networks and embeddedness has profoundly impacted upon economic sociology and management studies, its diffusion into economic geography’s lexicon remained relatively slow until the early 1990s (Peck, 2005; Grabher, 2006). In particular, Dicken and Thrift (1992) made a strong case for economic geographers to take networks and embeddedness very seriously in the geographical analysis of firms and their productive activities. This initiative towards networks and relations in spatial formations provided the disciplinary platform for what has subsequently emerged as the “relational turn” in new economic geography (Bathelt and Glückler, 2003; Yeung, 2005). Specifically, a group of economic geographers have taken the embeddedness of economic actors as the central analytical focus in their research (Grabher, 1993; Yeung, 1994; Hess, 2004). By the late 1990s, the concept of embeddedness had become one analytical cornerstone of the GPN framework in economic geography (Dicken et al., 2001; Henderson et al., 2002).

What might seemingly be missing in an embeddedness framework that relies on the structural analysis of network relations, however, is the role of *geographical agents* such as firms. This concern with the disappearance of actors in the “sea” of network relations has compelled economic geographers to understand better the nature and properties of networks and their constituents. The work of actor-network analysis in science and technology studies since the

mid 1980s becomes highly useful here (Law and Hassard, 1999). The geographical adaptation of this analysis through the work of Nigel Thrift (1996) and Jonathan Murdoch (1997), among others, is critical in the development of a non-essentialist version of the GPN framework in Dicken et al. (2001). In particular, actors such as the firm are theorized in the GPN framework not as individual agents *per se*, but as a constitutive part of the wider network through which emergent power and effects are realized over space. This conception of actors and their power relations clearly improves on the earlier geographical work in industrial systems that focused primarily on economic linkages between and among firms.

What, then, does this relational framework focusing on networks mean for analyzing the global economy? This is where the final strand of literature concerning the global commodity/value chain analysis (GCC/GVC) makes the greatest impact. Influenced by Immanuel Wallerstein's world-system framework, in which different countries are sorted in a cascading order of core, semi-periphery, and periphery economies, the GCC/GVC analysis gained prominence after the mid 1990s, following the work by Gary Gereffi and Miguel Korzeniewicz (Gereffi and Korzeniewicz, 1990; 1994). Together with other researchers in development studies (e.g. Dieter Ernst, John Humphrey, and Hubert Schmitz), they have constructed an analytical framework that focuses on the *global* scale (Gereffi et al., 2005). The GCC/GVC analysis, in particular, has been shown to provide enormously important insights into a wide range of economic development issues such as industrial upgrading, technological and employment change, market expansion, trade patterns, and so on.

The GCC/GVC analysis, however, does suffer from some significant shortcomings that can be remedied through the GPN framework (see Dicken et al., 2001; Henderson et al., 2002). First, while the chain concept in the GCC analysis brings multiple geographical scales, particularly the global scale, to the forefront of its analysis, the *geography* of GCCs remains weakly developed and under-theorized – no doubt a reflection of the origin of the framework in sociology. The issue of territoriality is highly aggregated in the GCC framework, identifying the spatial units of analysis as either core or periphery. This is where the GPN framework in economic geography makes stronger claims because it deals with how actors in various GPNs are anchored in different places and multiple scales (from the national to the local scale). A more recent refinement of the GPN framework in Coe et al. (2004) has made an explicit analytical link between GPNs and (sub-national) regional development – a core issue for economic geographers since the 1980s.

Second, the institutional dimensions of the GCC/GVC analysis seem to be hijacked by its privileging of governance structures. The former includes the role of state policies and institutional conditions in shaping development outcomes in different places and regions. This line of analysis has been reinvigorated in the “new regionalism” literature in geography since the mid 1990s (see MacLeod, 2001), although, until recently, the precise connection between regional development and GPNs remains underdeveloped (see Coe et al., 2004). GCC/GVC analysis places much greater emphasis on alternative governance structures that are associated with the peculiar configuration of GCCs/GVCs in different industries and sectors. For example, in the clothing industry, the key driver is argued to be global buyers who dictate the terms of garment manufacturing. In the automobile industry, lead firms (assemblers) drive the entire GCC/GVC through their assembly plants located in different regions and countries.

To sum up, the historical antecedents of the GPN framework are complex and variegated. In many ways, the GPN framework associated with the Manchester School represents a

geographical take that integrates these different, and yet disparate, strands of conceptual frameworks to analyze the global space-economy. By drawing distant actors such as firms and non-firm institutions into a common analytical framework, the GPN analysis seeks to provide a dynamic conceptual apparatus that is sensitive to multiple scales and power relations. It remains to be seen, however, if the GPN framework has delivered on its promise in research in economic geography – a critical issue to which we shall turn now.

2. What do we know so far? State-of-the-art of GPN and related work in economic geography

As we have seen, the analysis of global production networks and how they relate to socio-economic development at various scales has come a long way over the last few years. There is now a growing body of literature that draws on this framework to answer the main questions of this strand of research, namely: How are GPNs constructed and how do they evolve? What are the underlying governance structures driving this evolution? Who, ultimately, benefits and loses through incorporation in or exclusion from GPNs, and in which places? In order to answer these questions, it is useful to think along the conceptual lines of research of the “Manchester School” variety and consider the dimensions of value, power and the embeddedness of individual and collective actors (see also Johns, 2006).

There can hardly be any dispute in (critical) economic geography about the uneven nature of the capitalist world economy, which results in a spatial mosaic of prosperous and underdeveloped places, regions, and states, or what elsewhere has been termed an archipelago economy (Veltz, 1997; Hess, 2004: 176). This has always been recognised in critical social science and therefore is nothing new (Coe and Yeung, 2001: 370). What is important, however, is the fact that an increasing number of social scientific studies now apply some form of network or relational approach to analysing the causes and mechanisms of uneven socio-economic development. This clearly departs from former state-centred approaches and thus offers a viable alternative to methodological nationalism (Pries 2005), which tends to over-play macro-economic rationales and the role of the nation-state as the most important arena of economic and societal development (Henderson et al., 2002). This is not to say the nation-state has lost importance as a major actor in global production networks, nor in regulating the global economy, as we shall see below. Rather, it points to how contemporary GPN/GVC analysis, in economic geography as well as cognate disciplines, puts an emphasis on the multi-scalarity of processes of value creation and industrial upgrading (Bair and Gereffi, 2003; Palpacuer and Parisotto, 2003; Liu et al., 2004; Coe and Hess, 2005).

To date, some of the most sophisticated network analysis of upgrading and value creation, enhancement and capture can be found in literature based on the GVC school of research (Schmitz, 2004; Gereffi et al., 2005). This work scrutinizes in great detail how the insertion of firms and regions into GPNs affects their prospects for development, although this view is not uncontested and concerns have been raised about the benefits of integration into the global economy for local companies (e.g. Kaplinsky, 2005). Against this research backdrop, the contributions by Parthasarathy/Aoyama and Grote/Täube in this issue demonstrate impressively how GPN-informed research can contribute to our knowledge of local upgrading in the global economy. Moreover, both papers show that economic theory (transaction cost or otherwise) is not sufficient for analysing the opportunities and threats related to upgrading. In their paper, Parthasarathy and Aoyama elaborate on the notions of institutional thickness and local entrepreneurship in the presence of multinational companies

to explain the development of Bangalore's software industry. In doing so, they create new insights into not only the processes of value creation and capture, but also the underlying forms of governance that go beyond popular dichotomies of global corporate power vs. local powerlessness and buyer-driven vs. producer-driven value chains. The limits of upgrading become clear in Grote's and Täube's paper on financial services in India. Alongside economic factors impinging on the possibilities of upgrading, they investigate how the embeddedness of actors and their embodied knowledge is shaping GPNs and thus influencing the opportunities for local value capture.

Recent work in economic geography has shown that cultural diversity and embeddedness are very much part of transnational economic activity (Hess, 2004; Wrigley et al., 2005; Wrigley and Currah, 2006; Coe and Lee, 2006). Depending on an actor's societal embeddedness and cultural background, power asymmetries, network configurations and governance modes may vary greatly within the same universalistic category of transnational production systems, e.g. buyer-driven commodity chains or modular networks (see Gereffi et al., 2005: 99; Hess and Coe in this issue). Working on supply chains in the Shanghai automotive cluster, Depner and Bathelt (2005) show how German companies try to overcome problems of operating in an unknown institutional and cultural environment that has different norms, rules and *modus operandi* (Gertler, 2004). Despite this evolving body of research, culture and non-firm institutions are – with the exception of the GPN framework – still treated as externalities in much of the existing conceptual literature on transnational systems of production. For example, Gereffi et al. (2005: 99; emphasis added), who are well known proponents of the GCC/GVC framework, argue that “we feel confident that the variables internal to our model influence the shape and governance of global value chains in important ways, *regardless* of the institutional context within which they are situated”. This neglect of institutions, on the local as well as regional and national level, poses a significant problem, in particular with GCC analysis, which explicitly excludes institutions like the state or NGOs as important actors and integral parts of GPN.

Accordingly, and in line with the GPN concept developed by Henderson et al. (2002), recent accounts of the state-of-the-art in GCC analysis call for a better recognition of the cultural, political and institutional environments in which GPN firms operate (Smith et al., 2002; Bair, 2005). Liu and Dicken's contribution in this issue is an excellent example of GPN research that takes the role of the state and other non-firm institutions seriously without falling into the trap of methodological nationalism. Utilizing the automobile industry in China as a case study, the authors explore the power of the Chinese state to “embed” foreign investors in this sector for the benefit of the national economy. Arguably, China is a very special case as far as its bargaining power vis-à-vis transnational corporations is concerned, mainly for two reasons. First, China has been regarded as a “must-invest” location for many foreign firms in the new millennium and therefore these foreign companies are sometimes willing to accept stringent conditions set by the host country. Second, the Chinese state has a fairly unique capability to pursue its interests due to the continued state-controlled political economy it represents. The result is what Liu and Dicken call “obligated embeddedness” of foreign companies in the Chinese economy. However, even if the bargaining power of states is low, the organisation and path-dependent development of GPNs and their embedded nature cannot be fully understood without taking into account the agency of the state and other non-firm institutions in our analysis (Dicken, 2005; Hess and Coe in this issue).

Moreover, Liu and Dicken's notion of “obligated embeddedness” indicates that embeddedness does not describe a “benign” world of cooperation between different actors

without any power asymmetries (Sayer, 2000; 2001). The article by Weller in this issue on the embeddedness of GPN in Fiji's garment industry reinforces this view by analysing the development of GPNs and their transformation as a dynamic process that is characterized by the scalar interdependencies between trust, embeddedness and power. Unlike much of the GCC/GVC literature, where governance structures are conceptualised primarily along the ideas of power as a capacity and resource, Weller also highlights the importance of a relational view of power (Allen, 2003; Yeung, 2005). In a similar vein, the paper by Hess and Coe has at its core the role of power and embeddedness in shaping the organisation and spatiality of GPNs in the mobile telecommunications industry. The entanglement of power and embeddedness becomes particularly obvious when investigating the standard setting process in this industry. Technological standards can be considered as a main tool to appropriate value for network members (O'Riain, 2004) and to gain control over particular nodes in telecommunications value networks. How the process of standard setting is played out between different actors, however, does not follow universal rules of transaction cost economies, but depends to a large extent on the societal embeddedness of the actors involved, i.e. their cultural background and historical development in particular institutional contexts (Hess, 2004).

To summarize this section: what has contemporary GPN research achieved so far? Thanks to a wealth of literature on global value chains in economic geography and cognate disciplines, we have now a much better understanding of upgrading processes and their limits. In this context, particular emphasis has been put on integrating local clusters into global value networks (Schmitz, 2004; Nadvi and Halder, 2005). A growing body of work is emerging now that is contextualising global inter-firm networks and value creation processes by incorporating the role of the state and other non-firm institutions as important agents of GPN in their analysis (Dicken, 2003; Coe et al., 2004). And last but not least, we know more now about the embedded and path-dependent nature of GPN development and its spatialities (Domanski, 2005; Hsu, 2005).

3. Where do we go from here? Future challenges to GPN work

We have so far traced the history of different current strands in GPN research and discussed a range of concrete examples that have emerged over the last few years. There are certainly more publications on GPN than could be referenced and appreciated here. What has become clear from our admittedly selective discussion, however, is the variety of lenses through which networks in different industries and in different parts of the world are viewed. There is certainly much common ground in all of these studies, but the differences between them have become equally obvious. Therefore, there arises a question of whether there can or should be a unified approach to GPN analysis and what such a framework needs to acknowledge.

From our point of view, the ontological challenge that GPN research is facing mainly lies in integrating both the material and the socio-cultural dimensions of GPN development. In other words, how do we conceptualise a relational network approach that is neither under-socializing nor over-socializing in its explanatory capacity? How should future GPN research address the mutual interdependencies of the social/cultural and the economic, and agency and structure (see also Bathelt, 2006)? A way forward might be to try and reconsider some fundamental insights from different intellectual currents in economic geography, namely political economy, actor-network-theory (ANT) and "new economic geography", the latter often used as a synonym for the cultural turn in the discipline and not to be confused with Krugman's "geographical economics". Political economy has much to offer in terms of

explaining the structural and institutional preconditions of human action, while ANT as a poststructuralist concept helps us focus on the agency dimension in producing GPNs. The cultural turn – albeit largely ignoring the material and economic basis of contemporary capitalism (discussed below in more detail) – is helpful in integrating the socio-cultural dimension of economic exchange and value creation, enhancement and capture. To this end, progress has already been made over the last decade or so. For instance, while deriving from the ‘structuralist’ world systems theory concerned with the “system-world”, to use Habermas’ term, the GCC analysis clearly has moved on to investigate the life-world dimensions of global production and development (e.g. Lagendijk, 2004). This is not to say that “systemic” economic rationales (capitalist modes of production, reducing cost, increasing profit) are not important or that relatively formal “systems” (markets, bureaucratic organisations) with their own logic and momentum do not play a major role in shaping the organisation of global industries. As Sayer (2001: 690) notes, “[c]oncrete economic organisations like firms exist in both system and lifeworld”. However, systems “are always culturally embedded in and dependent on the lifeworld; hence, the latter is a precondition of systems, not an add-on” (Sayer, 2001: 689). What might be called for, then, is a cultural political economy of GPNs to inform future research.

Related to these ontological challenges, the GPN framework is also confronted with certain *epistemological* problems, particularly with regard to its theoretical foundations. As noted in Table 1, the GPN framework in economic geography owes its theoretical ideas much more to economic sociology and network analysis than orthodox economics. This phenomenon is certainly not accidental because, as observed by Peck (2005), economic geographers seem to ‘play out’ much more with sociologists and organizational theorists than hard-nosed economists. In doing so, there is a danger in GPN work of over-emphasizing social relations stretched across space at the expense of economic transactions that *constitute* the very foundation of GPNs. As stated earlier, we should not lose sight of the fundamental economic *raison d’être* of each global production network. The challenge to future GPN research rests with our continual commitment to the analysis of the spatial creation, enhancement, and capture of *value* – defined as surplus value and economic rent – in different configurations of GPNs.

This continual focus on the economic and development outcome of GPNs in the global economy points us to another epistemological challenge – the broadening of the GPN framework to incorporate varieties of capitalism into its analytical orbit. A significant body of literature in comparative international political economy has confirmed that the economic organization of capitalism varies across different countries and regions (Whitley, 1999; Hall and Soskice, 2001). Again, the intellectual foundations of the GPN framework in micro-sociological network analysis and macro-GCC/GVC frameworks do not provide a ready-made solution to this epistemological problem. In the former literature, capitalism is clearly too much a structural phenomenon to be accounted for. In the latter framework, capitalism remains essentially as the backdrop through which GCCs/GVCs operate seamlessly. This relative silence on one of the most significant issues in contemporary social science poses a serious challenge to the GPN analysis. Put simply, how does the GPN framework account for the fact that despite the ability of lead firms in GPNs to enrol virtually all economies in the world into their activities, there remains a persistent divergence in different national economies in terms of business and industrial organizations, institutional structures, and levels of articulation into the global economy? These significant and, yet, persistent differences in the economic organization of capitalisms need to be theorized successfully in future epistemological development of the GPN framework for it to be a much more potent

analytical tool for understanding contemporary globalization and economic development. To this end, the ‘Manchester School’ of GPN research has taken on this challenge to consider varieties of capitalism through the notion of societal embeddedness.

Apart from ontological and epistemological challenges, the GPN framework suffers from a relatively underdeveloped *methodological foundation*. Despite its apparently sophisticated theoretical outlook, we still do not have a systematic set of methodological tools to operationalize the framework. While a process-based methodology has been argued to ease the “methodological shortfall” in new economic geographies (Yeung, 2003), there is no explicitly articulated methodology for doing GPN research. Judging from empirical studies that adopt the GPN framework reviewed in the previous section and the following five papers, we can ascertain several methodological traits of GPN research. First, there is a strong preference for qualitative interview-based approach to collecting empirical data on the *mechanisms* and *processes* of GPNs. This preference for interviews with key actors in GPNs has many scientific advantages in relation to the richness and explanatory power of observations (see Clark, 1998). However, it falls short of delivering a rigorous analysis that can give the “big picture” of GPNs on a global scale.

Second, multi-site research seems to provide a better set of data for *triangulation* purposes. Typically, an economic geographer will trace the entire GPN or a large portion of it in order to focus strategically on some key sites within this GPN, e.g. where the lead firm operates and where some of its key suppliers and markets are located. This “tracing the GPN” method can be very rewarding, but it is equally challenging methodologically (and even financially!). There is therefore a need to coordinate GPN research perhaps on such a scale that resembles a research GPN in its own right. This methodological challenge is immense but can be overcome with cross-national coordination of research funding and activities. Some of the papers in this special issue have exemplified how research GPNs work in reality (e.g. Aoyama and Parthasarathy in this issue).

Third, unlike its predecessors such as network analysis and the GCC/GVC analysis, GPN-inspired work in economic geography tends to rely much less on *quantitative data*. This inherent distrust of quantitative data such as trade and production statistics is unfortunate as empirical research in the GCC/GVC analysis shows their significance and usefulness in providing a broad picture of the composition and operation of different transnational systems of production and consumption in the global economy (see Feenstra and Hamilton, 2006). Economic geographers who work in the spirit of the GPN paradigm should perhaps incorporate more explicitly quantitative data and relevant statistical tools (including GIS techniques) into their analysis of GPNs across the world. This call for integrating qualitative and quantitative data in our research is certainly nothing new (see Sheppard, 2001). Of all the different strands of research that fall under the broad rubric of new economic geographies, we believe that GPN research provides the most convincing and likely research platform for such an integration to take place.

References

Allen, John (2003), *Lost Geographies of Power*, Oxford: Basil Blackwell.

Bair, Jennifer (2005), ‘Global capitalism and commodity chains: looking back, going forward’, *Competition & Change* Vol. 9(2), pp. 153-80.

- Bair, Jennifer and Gereffi, Gary (2003), 'Upgrading, uneven development, and jobs in the North American apparel industry', *Global Networks* Vol. 3(2), pp. 143-69.
- Bathelt, Harald (2006), 'Geographies of production: growth regimes in spatial perspective 3 – towards a relational view of economic action and policy', *Progress in Human Geography*, Vol.30.
- Bathelt, Harald and Glückler, Johannes (2003), 'Toward a relational economic geography', *Journal of Economic Geography*, Vol.3(2), pp.117-44.
- Clark, Gordon L. (1998), 'Stylized facts and close dialogue: methodology in economic geography', *Annals of the Association of American Geographers*, Vol.88(1), pp.73-87.
- Coe, Neil M. and Yeung, Henry Wai-chung (2001), 'Geographical perspectives on mapping globalisation', *Journal of Economic Geography* Vol.1(4), pp. 367-80.
- Coe, Neil M. and Hess, Martin (2005), 'The internationalization of retailing: implications for supply network restructuring in East Asia and Eastern Europe', *Journal of Economic Geography* Vol. 5(4), pp. 449-73.
- Coe, Neil M. and Lee, Yong-Sook (2006), 'The strategic localization of transnational retailers: the case of Samsung-Tesco in South Korea', *Economic Geography*, Vol. 82, in press.
- Coe, Neil, Hess, Martin, Yeung, Henry Wai-chung, Dicken, Peter and Henderson, Jeffrey (2004), "'Globalizing" regional development: a global production networks perspective', *Transactions of the Institute of British Geographers*, New Series, Vol.29(4), pp.468-84.
- Dacin, M.Tina, Ventresca, Marc J. and Beal, Brent D. (1999), 'The embeddedness of organizations: dialogue and directions', *Journal of Management*, Vol.25(3), pp.317-56.
- Depner, Heiner and Bathelt, Harald (2005), 'Exporting the German model: the establishment of a new automobile industry cluster in Shanghai', *Economic Geography* Vol. 81(1), pp. 53-81.
- Dicken, Peter (1986), *Global Shift: Industrial Change in a Turbulent World*, London: Harper & Row.
- Dicken, Peter (2003), *Global Shift. Reshaping the Global Economic Map in the 21st Century*, 4th Edition, London: Sage.
- Dicken, Peter (2005) *Tangled Webs: Transnational Production Networks and Regional Integration*, Department of Geography, University of Marburg: SPACES 2005-04
- Dicken, Peter and Thrift, Nigel (1992), 'The organization of production and the production of organization: why business enterprises matter in the study of geographical industrialization', *Transactions of the Institute of British Geographers*, New Series, Vol.17, pp.279-91.

- Dicken, Peter, Kelly, Philip, Olds, Kris and Yeung, Henry Wai-chung (2001), 'Chains and networks, territories and scales: towards an analytical framework for the global economy', *Global Networks*, Vol.1(2), pp.89-112.
- Domanski, Boleslaw (2005), 'Transnational corporations and the post-socialist economy : learning the ropes and forging new relationships in contemporary Poland', in Alvstam, Claes and Schamp, Eike (eds.), *Linking Industries Across the World. Processes of Global Networking*, Aldershot: Ashgate, pp. 147-72.
- Feenstra, Robert C. and Hamilton, Gary G. (2006), *Emergent Economies, Divergent Paths: Economic Organization and International Trade in South Korea and Taiwan*, Cambridge: Cambridge University Press.
- Gereffi, Gary and Korzeniewicz, Miguel (1990), 'Commodity chains and footwear exports in the semiperiphery', in William G. Martin (ed.), *Semiperipheral States in the World-Economy*, Westport, Conn.: Greenwood Press, pp.45-68.
- Gereffi, Gary and Korzeniewicz, Miguel (eds.) (1994), *Commodity Chains and Global Capitalism*, Westport, Conn.: Praeger.
- Gereffi, Gary, Humphrey, John and Sturgeon, Timothy (2005), 'The governance of global value chains', *Review of International Political Economy*, Vol.12(1), pp.78-104.
- Gertler, Meric (2004), *Manufacturing Culture: The Institutional Geography of Industrial Practice*, New York: Oxford University Press.
- Grabher, Gernot (2006), 'Trading routes, bypasses, and risky intersections: Mapping the travels of "networks" between economic sociology and economic geography', *Progress in Human Geography*, Vol.30.
- Grabher, Gernot (ed.) (1993), *The Embedded Firm: The Socio-Economics of Industrial Networks*, London: Routledge.
- Granovetter, Mark (1985), 'Economic action, and social structure: the problem of embeddedness', *American Journal of Sociology*, Vol.91(3), pp.481-510.
- Guillén, Mauro F., Collins, Randall, England, Paula and Meyer, Marshall (eds.) (2003), *The New Economic Sociology: Developments in an Emerging Field*, New York: Russell Sage.
- Hall, Peter A. and Soskice, David (eds.) (2001), *Varieties of Capitalism: The Institutional Foundations of Comparative Advantage*, Oxford: Oxford University Press.
- Hamilton, F.E. Ian and Linge, Godfrey J.R. (eds.) (1979), *Spatial Analysis, Industry and Industrial Environment: Progress in Research and Applications*, Vol.I, Chichester: John Wiley.
- Hamilton, F.E. Ian and Linge, Godfrey J.R. (eds.) (1981), *Spatial Analysis, Industry and Industrial Environment: Progress in Research and Applications*, Vol.II, Chichester: John Wiley.

- Hamilton, F.E. Ian and Linge, Godfrey J.R. (eds.) (1983), *Spatial Analysis, Industry and Industrial Environment: Progress in Research and Applications*, Vol.III, Chichester: John Wiley.
- Harvey, David (1982), *The Limits to Capital*, Oxford: Basil Blackwell.
- Henderson, Jeffrey, Dicken, Peter, Hess, Martin, Coe, Neil and Yeung, Henry Wai-chung (2002), 'Global production networks and the analysis of economic development', *Review of International Political Economy*, Vol.9(3), pp.436-64.
- Hess, Martin (2004), "'Spatial" relationships? Towards a reconceptualization of embeddedness', *Progress in Human Geography*, Vol.28(2), pp.165-86.
- Hsu, Jinn-yuh (2005), 'From transfer to hybridisation? The changing organisation of Taiwanese PC investments in China', in Alvstam, Claes and Schamp, Eike (eds.), *Linking Industries Across the World. Processes of Global Networking*, Aldershot: Ashgate, pp. 173-96.
- Johns, Jennifer (2006), 'Video games production networks: value capture, power relations and embeddedness', *Journal of Economic Geography* Vol. 6.
- Kaplinsky, Raphael (2005), *China, Globalisation and Neo-Liberal Dogma*, Paper prepared for the 50th Anniversary Conference, Queen Elizabeth House, Oxford, 4th – 6th July, 2005.
- Kilduff, Martin and Tsai, Wenpin (2003), *Social Networks and Organizations*, London: Sage.
- Lagendijk, Arnoud (2004), 'Global 'lifeworlds' versus local 'systemworlds': how flying winemakers produce global wines in interconnected locales', *Tijdschrift voor Economische en Sociale Geografie* Vol. 95(5), pp. 511-26.
- Law, John and Hassard, John (eds.) (1999), *Actor Network Theory and After*, Oxford: Blackwell.
- Liu, Weidong, Dicken, Peter and Yeung, Henry Wai-chung (2004), 'New information and communication technologies and local clustering of firms: a case study of the Xingwang Industrial Park in Beijing', *Urban Geography* Vol. 25(4), pp. 390-407.
- MacLeod, Gordon (2001), 'Beyond soft institutionalism: accumulation, regulation, and their geographical fixes', *Environment and Planning A*, Vol.33(7), pp.1145-167.
- Massey, Doreen (1984), *Spatial Divisions of Labour: Social Structures and the Geography of Production*, London: Macmillan.
- Murdoch, Jonathan (1997), 'Towards a geography of heterogeneous associations', *Progress in Human Geography*, Vol.21(3), pp.321-37.

- Nadvi, Khalid and Halder, Gerhard (2005), 'Local clusters in global value chains: exploring dynamic linkages between Germany and Pakistan', *Entrepreneurship & Regional Development*, Vol. 17, pp. 339-63.
- Nadvi, Khalid and Wältring, Frank (2004), 'Making sense of global standards', in Schmitz, Hubert (ed.), *Local enterprises in the global economy. Issues of governance and upgrading*, Cheltenham: Edward Elgar, pp 53-94.
- O'Riain, Sean (2004), 'The politics of mobility in technology-driven commodity chains: developmental coalitions in the Irish software industry', *International Journal of Urban and Regional Research*, Vol. 28(3), pp. 642-63.
- Palpacuer, Florence and Parisotto, Aurelio (2003), 'Global production and local jobs : can global production networks be used as levers for local development?', *Global Networks* Vol.3(2), pp.97-120.
- Peck, Jamie A. (2005), 'Economic sociologies in space', *Economic Geography*, Vol.81(2), pp.129-75.
- Porter, Michael E. (1980), *Competitive Strategy: Techniques for Analyzing Industries and Competitors*, New York: The Free Press.
- Porter, Michael E. (1985), *Competitive Advantage: Creating and Sustaining Superior Performance*, New York: The Free Press.
- Pries, Ludger (2005), 'Configurations of geographic and societal spaces: a sociological proposal between 'methodological nationalism' and the 'space of flows'', *Global Networks* Vol. 5(2), pp. 167-90.
- Sayer, Andrew (2000), *Markets, Embeddedness and Trust: Problems of Polysemy and Idealism*, Department of Sociology, University of Lancaster: Mimeo.
- Sayer, Andrew (2001), 'For a critical cultural political economy', *Antipode* Vol. 33(4), pp. 687-708.
- Sayer, Andrew and Walker, Richard (1992), *The New Social Economy: Reworking the Division of Labour*, Cambridge, Mass.: Basil Blackwell.
- Schmitz, Hubert (ed.) (2004), *Local Enterprises in the Global Economy*, Cheltenham: Edward Elgar.
- Sheppard, Eric (2001), 'Quantitative geography: representations, practices and possibilities', *Environment and Planning D: Society and Space*, Vol.20(5), pp.535-54.
- Smelser, Neil and Swedberg, Richard (eds.) (2005), *The Handbook of Economic Sociology*, Second Edition, Princeton, NJ: Princeton University Press.
- Smith, Adrian, Rainnie, Al, Dunford, Mick, Hardy, Jane and Hudson, Ray (2002), 'Networks of value, commodities and regions: reworking divisions of labour in macro-regional economies', *Progress in Human Geography* Vol. 26, pp. 41-63.

- Smith, Neil (1984), *Uneven Development: Nature, Capital and the Production of Space*, Oxford: Basil Blackwell.
- Thrift, Nigel (1996), *Spatial Formations*, London: Sage.
- Veltz, Pierre (1997), *Mondialisation, Villes et Territoires : L'Economie d'Archipel*, Paris : PUF.
- Whitley, Richard (1999), *Divergent Capitalisms: The Social Structuring and Change of Business Systems*, New York: Oxford University Press.
- Williamson, Oliver E. (1975), *Markets and Hierarchies: Analysis and Antitrust Implications*, New York: The Free Press.
- Williamson, Oliver E. (1985), *The Economic Institution of Capitalism*, New York: The Free Press.
- Wrigley, Neil and Currah, Andrew (2006), 'Globalizing retail and the 'new e-economy': the organizational challenge of e-commerce for the retail TNCs', *Geoforum* Vol. 37.
- Wrigley, Neil, Coe, Neil M. And Currah, Andrew (2005), 'Globalizing retail: conceptualizing the distribution-based TNC', *Progress in Human Geography* Vol. 29(4), pp. 437-57.
- Yeung, Henry Wai-chung (1994), 'Critical reviews of geographical perspectives on business organisations and the organisation of production: towards a network approach', *Progress in Human Geography*, Vol.18(4), pp.460-90.
- Yeung, Henry Wai-chung (2003), 'Practicing new economic geographies: a methodological examination', *Annals of the Association of American Geographers*, Vol.93(2), pp.442-62.
- Yeung, Henry Wai-chung (2005), 'Rethinking relational economic geography', *Transactions of the Institute of British Geographers*, New Series, Vol.30(1), pp.37-51.

TABLE 1. Antecedents of the Global Production Networks Framework

Historical Antecedents	Main Disciplines	Key Concepts	Major Authors	Relevance for the GPN Framework in Economic Geography
Value chain framework since the early 1980s	<ul style="list-style-type: none"> Strategic management 	<ul style="list-style-type: none"> Stages of production Competitive strategies Competitive advantage 	<ul style="list-style-type: none"> Michael Porter 	<ul style="list-style-type: none"> Spatial (re)organization of production activities Importance of value as a concept in GPN Production as both manufacturing and service activities
Networks and embeddedness perspectives since the mid 1980s	<ul style="list-style-type: none"> Economic sociology Organization studies Strategic management 	<ul style="list-style-type: none"> Inter-organizational relations to business formation and performance Intertwined relationships between economic action and social structures 	<ul style="list-style-type: none"> Ronald Burt Mark Granovetter Carlos Jarillo Jan Johanson Nitin Nohria Walter Powell 	<ul style="list-style-type: none"> Lead firms and their embedded networks Networks as relations stretching across space Value creation, enhancement and retention in networks
Actor-network analysis since the mid 1980s	<ul style="list-style-type: none"> Science and technology studies Poststructuralism in social science 	<ul style="list-style-type: none"> Heterogeneous relations Control from a distance Actants as humans and non-humans 	<ul style="list-style-type: none"> Michel Callon Bruno Latour John Law 	<ul style="list-style-type: none"> Networks and relations as foundation in GPN analysis Power relations among actors in GPNs
Global commodity and value chain analysis since the mid 1990s	<ul style="list-style-type: none"> Economic sociology Development studies 	<ul style="list-style-type: none"> Commodity production as a sequential chain Value creation in chain organization 	<ul style="list-style-type: none"> Dieter Ernst Gary Gereffi John Humphrey Hubert Schmitz 	<ul style="list-style-type: none"> GPN's spatial configurations and economic development outcomes Institutional influence on GPNs